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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,924	08/22/2003	Xicheng Jiang	1875.3460001	9289

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EXAMINER

JEAN PIERRE, PEGUY

ART UNIT PAPER NUMBER

2819

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,924

Applicant(s)

JIANG ET AL.

Examiner

Peguy JeanPierre

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7, 11 and 12 is/are allowed.
- 6) ☒ Claim(s) 8 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/27/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements filed on 12/5/2003 and 2/4/2004 has been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior art (APA; Fig.1) in view of Wang et al.(USP 4,521,765).

APA discloses in Figure 1 a reference ladder that comprises a plurality of resistors and taps (104), an array of differential input amplifiers (101) each inputting an input voltage and a corresponding reference voltage and outputting a difference signal to be stored in

latches (102) and then converted to digital into a decoder (103). The APA fails to teach a plurality of current sources serially connected to each tap of the reference ladder. .

Wang et al. disclose in Figure 2 a reference ladder that comprises a plurality of resistors and taps. The system of Wang et al. can also be implemented in an analog to digital converter (see col. 10, lines 30-33). Each tap is serially coupled to a current source (see col. 7, lines 6-10) and controlled by respective bit currents (see col. 5, lines 45-49). The system of Wang et al. reduces waste current and hence voltage variation and minimize non-linearity errors in the converter. Therefore, it would have been obvious to one having ordinary skill in the art to modify the prior art circuit by serially connected a current source to each tap of the resistor network as taught by Wang et al. to improve the accuracy of the reference voltage inputted into the differential amplifier and thereby improve the performance of the converter.

Allowable Subject Matter

5. Claims 1-7 and 11-12 are allowed.
6. Claims 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach an analog to digital converter that comprises a first and a second interface amplifiers that are respectively connected together at a predetermined crosspoint and to each edge of a first and a second array of differential amplifiers, respectively; the prior art does not also teach a second


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controllable current source that is connected to the supply rail and tap of a reference ladder of the analog to digital converter, a track and hold amplifier that comprises a first and a second pair of transistors that are separately independently clocked at their gates and a third pair of transistors whose gates receive the differential input signals and its replica (third pair) reduces the non-linear well behavior of the system.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bult (USP 6,650,267), Ono et al. (USP 6,710,734), Jiang et al. (USP 6,621,649), Bult et al. (USP 6,169,510), Harada (USP 6,373,420) discloses analog to digital converters comprising differential amplifiers; Thies et al. (USP 6,285,308), Saari et al. (USP 4,176,344) disclose analog to digital converter with controllable current sources.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peguy JeanPierre whose telephone number is (571) 272-1803. The examiner fax phone number is (571) 273-1803.


Peguy JeanPierre
Primary Examiner